United Nations A/66/207

General Assembly

Distr.: General
28 July 2011

Original: English

Sixty-sixth session
Item 17 (d) of the provisional agenda*
Macroeconomic policy questions: commodities

World commodity trends and prospects

Note by the Secretary-General

The Secretary-General has the honour to transmit to the General Assembly, as requested by the Assembly at its sixty-fourth session in resolution 64/192 of 21 December 2010, the present report on world commodity trends and prospects, including on the causes of excessive commodity price volatility, as prepared by the secretariat of the United Nations Conference on Trade and Development.

* A/66/150.

11-43642 (E) 160811

Please recycle

Report of the secretariat of the United Nations Conference on Trade and Development on world commodity trends and prospects

Summary

Over the past 12 months, commodity markets have recovered from the lows of the 2008-2009 global economic and financial crises, with prices reaching record levels in 2011, in exceptionally volatile markets. Prices of crude oil, minerals and precious metals have more than doubled their end-of-year 2008 levels. The prices of key agricultural commodities, including coffee, maize, cotton, oats and sugar (although not rice) have also surpassed their levels since the last report on world commodity trends and prospects (see A/64/184), issued in 2009.

Surging commodity prices have contributed to the recent popular uprisings and food riots in some countries as food-price inflation (particularly concerning staples) and rising energy costs have taken their toll. In recent years, high prices across a range of commodities, as well as the diversification benefits stemming from a wide array of investment opportunities, have drawn speculative investors — for example, hedge funds and commodity-index and exchange-traded funds (ETFs) — into commodity markets. Further, increasing demand in emerging economies, sovereign debt problems, the faltering value of the United States dollar and concerns about inflation have made these markets attractive to speculative investors.

The negative impacts of the growing volatility and unexpected commodity price swings on global food security and economic welfare for producers, industry and commodity-dependent developing countries have prompted collaborative global action (see, for example, the Group of Twenty (G-20) Action Plan on Food Price Volatility and Agriculture). It is imperative that global initiatives and national policies be effectively aligned, resourced and implemented so as to address the critical issues affecting international commodity trade and the development prospects in those countries. Policy measures should aim to improve market functioning and increase countries' resilience to shocks.

Contents

		Page
I.	Introduction	4
II.	Recent developments in commodity markets: fluctuating fortunes — from boom to bust to boom	5
III.	Market developments in major commodity groups	6
	A. Agricultural and food crops	6
	B. Forestry	10
	C. Energy: oil and gas	11
	D. Crude oil	12
	E. Natural gas	13
	F. Coal	14
	G. Minerals, ores and metals	15
IV.	Commodity price volatility: potential policy responses at the domestic and international levels	18
	A. Policy responses to commodity price volatility	18
	B. Supply management schemes: international commodity agreements	19
	C. Income support programmes	20
	D. Market-based risk management mechanisms	21
	E. Revenue management	22
	F. Diversification and value-addition	23
V.	Concluding remarks	24
Annex		
	Commodity price development and the financialization of commodity trading	26

I. Introduction

1. The present report on world commodity trends and prospects, prepared by the secretariat of the United Nations Conference on Trade and Development pursuant to General Assembly resolution 64/192, provides an analysis of the causes of excessive commodity price volatility.

2. Since mid-2009, when the last report (see A/64/184) was prepared, commodity price trends have been driven by strong demand in emerging Asian economies, stock replenishment in the countries of the Organization for Economic Cooperation and Development (OECD), and diminished concerns about the contagion of financial turbulence in Europe. The commodities that have experienced the largest increases in prices were agricultural raw materials, minerals and metals. In contrast, the prices of agricultural commodities grew at moderate rates, with the exception of some tropical beverages (coffee, for example).

3. Much of the surge in prices and volatility in non-agricultural commodity and food markets in the last six months may be attributed to the geopolitical tensions in major oil-producing countries — Algeria, the Libyan Arab Jamahiriya, Nigeria and Venezuela (Bolivarian Republic of), and elsewhere.[1] Growing demand for raw materials for industrial use and infrastructure development in emerging economies has also helped drive the rising prices of these commodities. Furthermore, sovereign debt problems, a faltering United States dollar and concerns about inflation have attracted speculative investment in commodities, particularly oil and precious metals derivatives, thereby contributing to market volatility.

4. Growing price volatility in commodity markets has prompted collaborative global action directed towards seeking out potential solutions. The Action Plan on Food Price Volatility and Agriculture promulgated by the Group of Twenty (G-20) leading market economies, under the auspices of the presidency of France, aims to mitigate the impact of price volatility upon food security. Such initiatives at all levels — national, regional and international — must be effectively implemented and developed further if they are to effectively address the difficult challenges affecting commodity trade and the development prospects for all commodity-dependent developing countries.[2]

5. This report intends to bring to the attention of Member States, through the General Assembly, the challenges and opportunities associated with the current high and volatile food and energy prices for trade and development. The substantial windfall revenues due to rising prices of agricultural and natural resources (for example, oil and gas, minerals and industrial and precious metals) must be prudently managed if they are to have a lasting impact on development. Likewise, the risks of political instability and food insecurity engendered by high food prices must be mitigated. Section II provides a synopsis of recent developments in commodity markets; section III reviews prices and markets within major commodity groupings — agriculture and food, oil and gas (energy), and mineral and metals; and section IV outlines potential policy responses to commodity price volatility at the

[1] The fact that the civil unrest in the Libyan Arab Jamahiriya took 39 million barrels of high-quality light sweet oil off the market was partially responsible for the sharp surge in crude prices, which peaked at $127 per barrel in April 2011.

[2] Commodity-dependent developing countries are defined as those for which commodity exports account for more than 60 per cent of total merchandise exports.

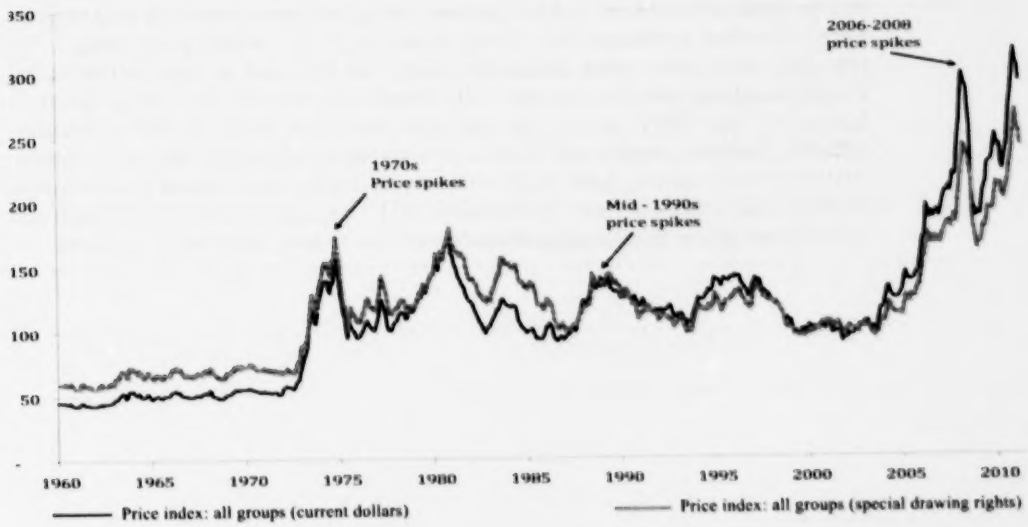
domestic and international levels. Concluding remarks are offered in section V. The annex to this report contains a discussion on the issue of commodity price development and the financialization of commodity trading.

II. Recent developments in commodity markets: fluctuating fortunes — from boom to bust to boom

6. It is widely recognized that there have been two major commodity price booms since the late 1950s — the first between 1973 and 1980, and the second beginning in 2002. The rise in commodity prices between 2002 and 2008, and especially between 2006 and 2008, was particularly pronounced for metals, crude oil and food. The 2008-2009 global financial crisis sent prices plummeting from mid-2008 across a broad range of commodities as global growth slowed down and consumer demand weakened in most major economies.

7. However, since the crisis in 2008-2009, all commodity subgroups have rebounded strongly; in the case of metals, agricultural raw materials and beverages, prices have surpassed even 2008 highs (see figure I). Energy prices (particularly crude oil) have more than doubled, although they remain below their former peaks. Minerals and industrial and precious metals have risen 120 per cent from their lowest point in mid-2008-2009. The prices of key agriculture and food (agrifood) products, beverages and agricultural raw materials have surpassed their previous record highs of mid-2008 (see figure II). By mid-2008, commodities had enjoyed a five-year price boom, the longest and broadest rally of the post-Second World War period after almost 30 years of generally low but moderately fluctuating prices.

Figure I
UNCTAD non-oil commodity price index
(January 1960-May 2011; 2000 = 100)



Source: UNCTADstat.

III. Market developments in major commodity groups

8. The present section provides a broad overview of markets and price situations in the major commodity groups — agriculture and food, energy, agricultural raw materials, minerals and metals. The majority of the recent price hikes in agrifood and non-agrifood commodities may be explained by market fundamentals: rising demand for commodities in emerging economies (especially China and India); adverse weather patterns due to greater climatic variability (increased incidence of floods and droughts); low yields and declining productivity growth rates in some regions; low inventories or stock levels; and increasing scarcity of arable farmland and water. Moreover, insufficient investment in mineral exploration and new technologies during the 1990s has led to supply shortages in this sector. In addition, the depreciation of the United States dollar, and government policies (subsidies, export restrictions and biofuels mandates) have also impacted commodity prices. Biofuels mandates may have diverted key staples (e.g., maize, palm oil and sugar cane) and agricultural land away from food production and towards the production of fuel.

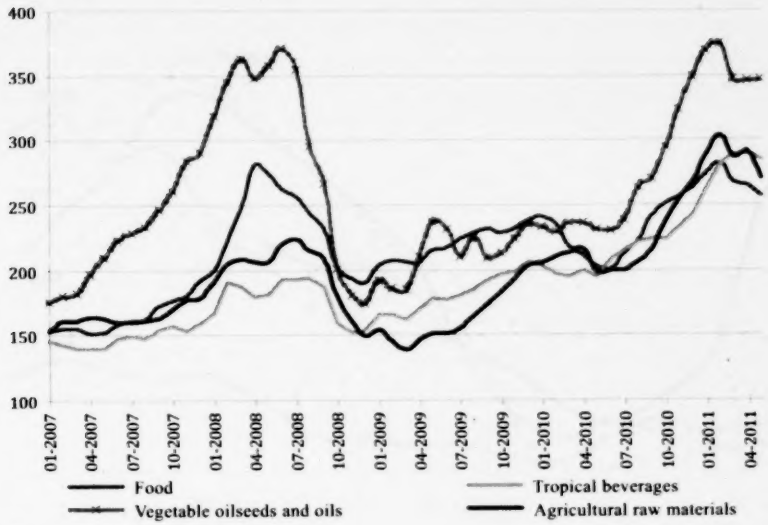
9. Recent geopolitical tensions in oil-producing countries in the Middle East and North Africa further fuelled the sharp upward trajectory in crude oil (and gasoline) prices during the first quarter of 2011. Finally, increased speculative investments in precious metals and minerals (seen as an insurance policy against low rates of economic growth in OECD countries) have also induced price rises in these commodities since June 2010.

A. Agricultural and food crops

10. The United Nations Conference on Trade and Development (UNCTAD) agricultural commodity price index peaked in February 2011. Figure II shows that agricultural commodity prices have risen unevenly. The price index of agricultural raw materials experienced a sharp increase owing to supply shortfalls generated by adverse weather conditions and strong demand in Asian emerging economies. The UNCTAD food price index decreased during the first half of 2010 before rising sharply, reaching a peak in February 2011 (figure III), and averaged 269 points from January to May 2011, up 21 per cent from the same period in 2010. Headline inflation (including energy and food) in developing countries rose from 6 per cent in 2010 to 6.9 per cent in April 2011, while world food price inflation in developing countries exceeded 9 per cent in February 2011.[3] Arguably, the burden of high and volatile food prices falls disproportionately on low-income developing countries.

[3] World Bank, "Global Economic Prospects: June 2011" (Washington, D.C., 2011), inflation annex (p. 67).

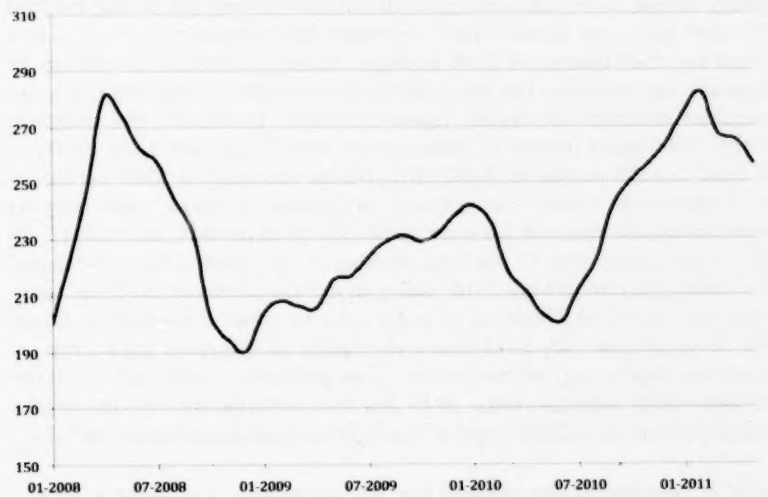
Figure II
Price indices of groups of agricultural commodities, January 2007-May 2011
(2000 = 100)



Source: UNCTADstat.

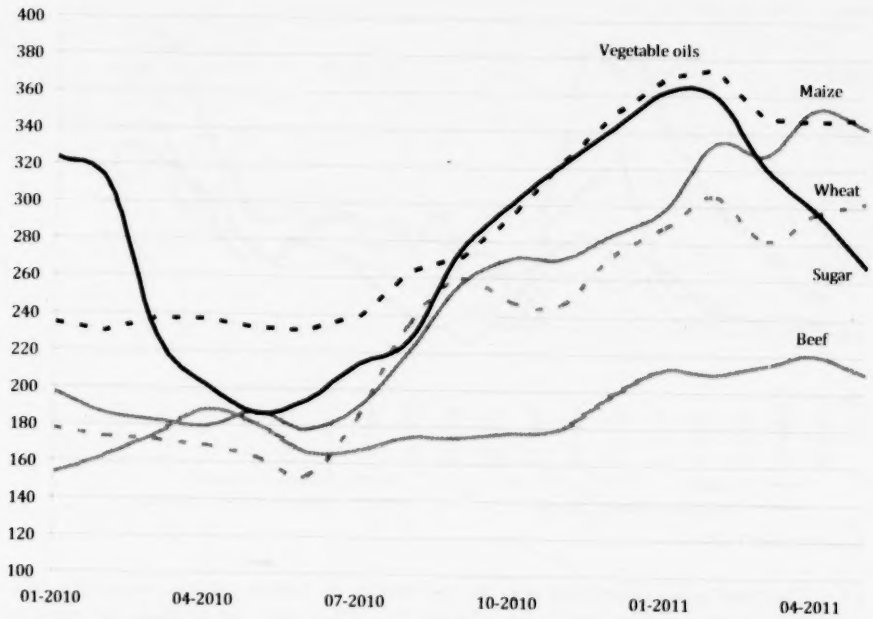
11. The food price index rise was driven mostly by higher cereals, vegetable oils, meat and dairy product prices (see figure IV). This was not critical for most of Africa because of good harvests of maize and sorghum, the main exception being the Horn of Africa where drought has exacerbated food insecurity. In Asia, prices for edible oil and some cereals (for example, wheat) are especially high.

Figure 3
UNCTAD food price index, 2008-2011
(2000 = 100)



Source: UNCTADstat.

Figure IV
Selected food commodity price indices, 2010-2011
(2000 = 100)



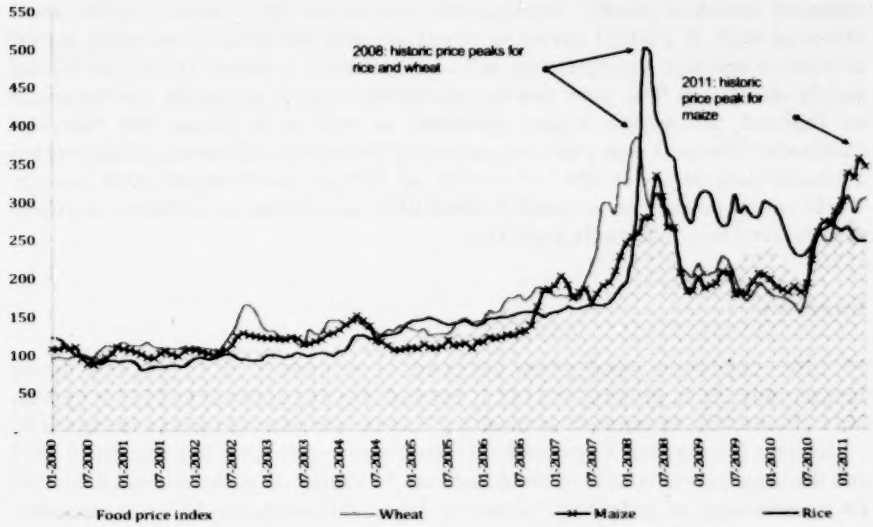
Source: UNCTADstat.

12. The benchmark wheat price rose to a high of $360 per ton in May 2011, just short of the price of $364 per ton reached in February 2011. The outlook for 2011/12 wheat crops is unclear, owing to unfavourable weather conditions in the United States of America and the European Union (EU).

13. The prices of rice, corn and sugar generally trended downward during the first half of 2010 and then rose steadily until February 2011 (figure IV). Rice prices recovered over the third quarter of 2010 because of adverse weather conditions in large Asian producing countries, but are unlikely to rise further during 2011 because of large quantities available for export (figure V). Maize in 2011/12 has traded at prices above the 2008 highs (figure V). Maize prices rose 98 per cent, from $160 per ton in June 2010 to $318 per ton in April 2011, before declining to $309 per ton in May 2011. Furthermore, rising consumption of animal products, especially in China,[4] helped stimulate demand for corn needed to feed animals in 2010/11. In January 2011, sugar prices rose 95 per cent, peaking at 29.6 United States cents per pound (¢/lb), from 15.2 ¢/lb in May 2010, owing to growing demand in China, India and Indonesia and increased diversion of sugar cane to ethanol production. Sugar prices fell to 21.95 ¢/lb in May 2011 based on reports of a surplus sugar crop — about 10.3 million metric tons of raw value — as producers responded to higher prices. The sugar price increase since 2010 has been underscored by the higher projected world demand for refined sugar in the light of anticipated market deficits.

[4] China, the world's second-biggest corn consumer after the United States, is estimated to use 47 times more corn than it did 10 years ago.

Figure V
Trends in world cereal price indices, 2000-2011
(2000 = 100)



Source: UNCTADstat.

14. Edible oil price indices peaked at 374 in February 2011, before declining (7.2 per cent) to 347 in May 2011. Price volatility in the edible oil markets is highly contingent on supply-and-demand prospects in major oilseeds-producing and exporting countries. Considering that China is the world's largest consumer of vegetable oils, the "China effect" on global oilseeds (notably soybeans) supplies and markets is critical to market prospects. Two of the most contentious issues involving both the oils and the oilseeds markets concern biofuels and sustainable palm oil production. Those issues have major implications for international trade, economic growth, investment, food security and environmental stewardship. The recent oilseed price surge reflects mainly a progressive tightening in global supplies combined with steady demand growth in major importing countries (see figure II).

15. The tropical beverages price index has risen steadily since December 2001, from 75 to a peak of 285 in May 2011 (figure II). There has been a fall of 5.4 per cent in the International Coffee Organization composite indicator price, from a monthly average of 228 US¢/lb for May to a monthly average of 215.6 US¢/lb in June.

16. Cocoa prices peaked at $1.60/lb in January 2010 owing largely to supply deficits.[5] However, prices dipped to a three-month low of $1.39/lb in August 2010, only to gradually rally to $1.58/lb by February 2011 and subsequently falling. Most African producers have enjoyed good harvests in the current crop year owing to good weather conditions. For example, cocoa arrivals in Côte d'Ivoire as of June

[5] International Cocoa Organization (ICCO), "Cocoa market review: May 2010" (London, 2010). Available from http://www.icco.org.

2011 amounted to 1.286 million tons, a figure 22 per cent higher than that for the same period in the previous season.[6]

17. After having fallen to 139 in March 2009, the price index of agricultural raw materials increased steadily, reaching 303 in February 2011. Natural rubber prices remained high in 2010/11 owing to strong demand for tyres in emerging market economies and high energy (crude oil) costs (affecting synthetic rubber prices) and supply disruptions from poor weather conditions in major producing countries such as Thailand, the world's biggest producer, as well as in China, Viet Nam and Cambodia. This peak was also underscored by the activity of cotton, which reached a historic peak in March 2011 of $2.3/lb, up 270 per cent from the 2009 average. World cotton production declined in 2009/2010 in a context of projected increased demand for fibres from India and China.

B. Forestry

18. Non-coniferous wood prices increased by an average of 2.1 per cent during January-July 2010, peaking at $142.1, but had steadily declined to $133.9 by May 2011 (figure VI). In contrast, tropical log (sapele and okoume) prices increased by 10 per cent (sapele) and 23 per cent (okoume) between the first five months of 2010 and the same period in 2011, a trend that may be explained by the increased demand for construction of temporary homes in Japan following the March earthquake. Stronger demand due to the slight upturn in the world economy, and its effect on the construction sector in Asian developing countries and, to a lesser extent, in developed countries, may also have contributed to higher prices.

[6] ICCO, "Cocoa market review: June 2011" (London, 2011). Available from http://www.icco.org.

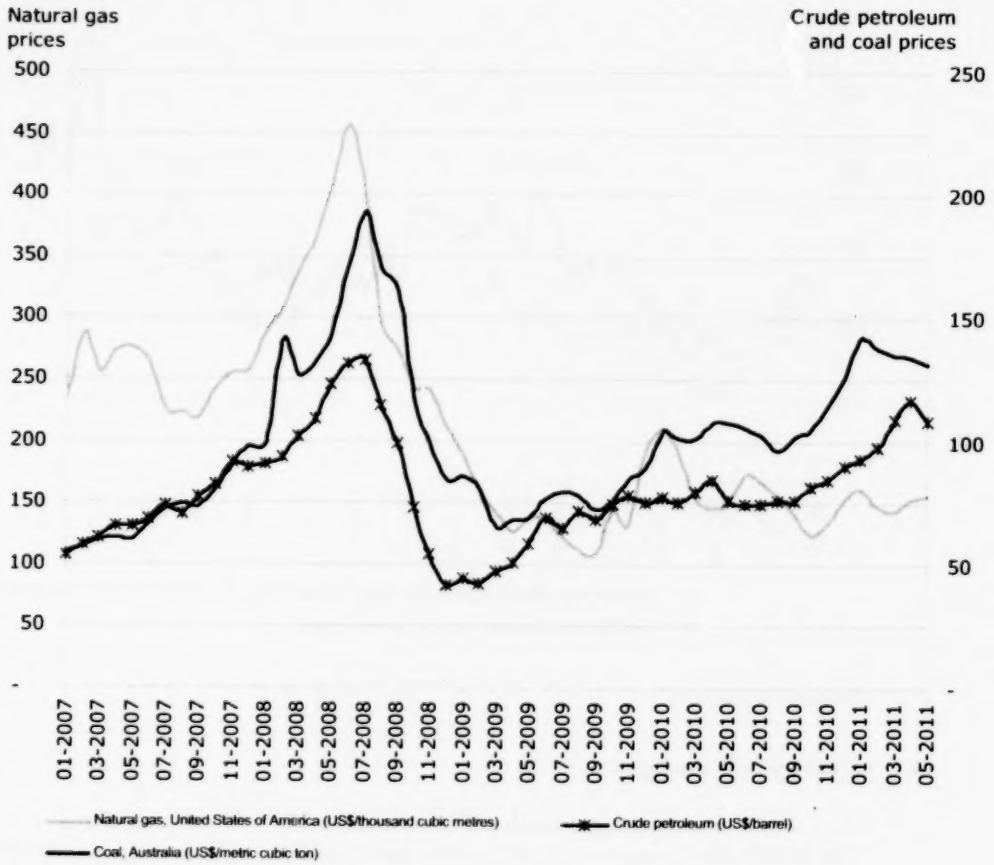
Figure VI
Tropical log prices, 1980-2011
(United States dollars per cubic metre)

Source: UNCTADstat.

C. Energy: oil and gas

19. World primary energy consumption is dominated by oil, natural gas and coal. The Middle East consumes oil and natural gas overwhelmingly, while coal and oil are the main sources of energy in Asia and the Pacific. Driven by demographic changes and rising incomes, Asia leads growth in energy consumption. Nevertheless, its primary energy consumption per head is relatively low, as compared with that of developed economies. Figure VII summarizes the key market trends for oil, natural gas and coal.

Figure VII
Monthly average prices of crude oil, natural gas and coal, January 2007-May 2011



Sources: UNCTADstat (for crude oil prices); International Monetary Fund (IMF); International Financial Statistics (for natural gas and coal prices).

D. Crude oil

20. Average oil prices reached $79 per barrel during 2010. In April 2011, the monthly average price of crude oil surged to US$ 116.30 per barrel,[7] almost triple its level in December 2008, although still below the previous cyclical peak of US$ 132.50 per barrel in July 2008. In a context of the continuing weakness of the United States dollar, increasing demand, instability in the region of the Middle East and North Africa, the disconnect between market fundamentals and production quotas of the Organization of the Petroleum Exporting Countries (OPEC) and

[7] UNCTADstat: average of the daily prices of United Kingdom Brent, Dubai and West Texas Intermediate, equally weighted.

declining reserves, the oil market faces uncertainties which pose a challenge to forecasting the behaviour of oil prices over the short and medium term.

21. From January to November 2010, monthly average prices fluctuated between US$ 74 and US$ 85 (figure VII), above the 2009 average of US$ 61.79 per barrel. The 2010 rise in prices was underpinned by market fundamentals. The recovery of industry and trade has led to a strong surge in oil demand. In 2010, the increase in global oil demand averaged 2.8 million barrels per day (mb/d),[8] more than double its average growth during the 2000s. Supply, however, did not grow at the same rate. Non-OPEC oil producing countries could increase supply by only 1.1mb/d in 2010 and OPEC output growth was limited to 0.7 mb/d (including natural gas liquids).

22. The period between December 2010 and June 2011 witnessed a high level of volatility in the oil market. In December 2010, the average price of crude oil broke away from its relative stability and rose to above US$ 90 per barrel. Oil prices continued this upward trajectory, peaking at US$ 116.30 per barrel in April 2011. Tighter supply and sustained demand growth largely explain this price upswing. The political turmoil in the region of the Middle East and North Africa has led to the loss of 1.3 mb/d of light sweet crude supplied by the Libyan Arab Jamahiriya, and has raised concerns about further disruptions of the energy supply. Despite high prices, the demand growth from developing countries, in particular from emerging Asia, has been resilient. Other factors, such as the weak United States dollar, activities of financial investors in commodity futures markets and expectations regarding economic growth, also contributed to the rise in oil prices.

23. In June 2011, after OPEC failed to reach an agreement on increasing oil output, the member States of the International Energy Agency (IEA) agreed to release 2 mb/d of oil from their emergency stocks over an initial period of 30 days in order to: (a) offset the supply disruptions in the Libyan Arab Jamahiriya and the seasonal increase in demand, until planned additional oil from major producing countries had reached global markets and (b) boost economic recovery. The markets responded promptly with Brent and Nymex West Texas Intermediate (WTI) crude oil futures prices dipping 6.1 per cent and 4.6 per cent, respectively.

24. Excessive oil market volatility has the potential to inhibit demand and reduce the pace of global economic recovery. Higher oil prices could also lead to significant shifts in wealth distribution across countries. For net oil exporting countries, high prices can improve the current account, generating government revenues and boosting public spending. However, for net oil importing developing countries, rising oil and food prices have led to high inflation and an increased fiscal burden.

E. Natural gas

25. World consumption of natural gas contracted by 1.1 per cent in 2009 owing to the crisis.[9] In 2010, gas demand rebounded as a result of economic recovery and exceptionally cold weather in the northern hemisphere. In the United States, the world's leading gas producer, the price of natural gas peaked at US$ 456.57 per

[8] International Energy Agency, "Oil market report" (Paris, 16 June 2011).

[9] U.S. Energy Information Administration, "International Energy Outlook 2010" (Washington, D.C., U.S. Department of Energy, July 2010).

thousand cubic metres in June 2008 (figure VII). In 2010, despite its recovery, the price of natural gas averaged US$ 158, much lower than its 2007 and 2008 levels. The first five months of 2011 saw the gas price fluctuate within the range of US$ 143-US$ 162.

26. The role of natural gas in any future energy mix will be determined by market fundamentals. On the supply side, since 2000, the development of "unconventional" sources of natural gas, yielding, for example, shale gas, tight gas and coal-bed methane (CBM), has taken off. The so-called *shale gas revolution* has dramatically increased the supply of natural gas in the United States market, kept gas prices at a low level and altered liquefied natural gas (LNG) trade patterns. According to IEA, unconventional gas now accounts for 60 per cent of marketed production in the United States. The growth of unconventional natural gas production in the United States and other countries such as Australia (with its production of CBM) will have a far-reaching impact on other regions of the world, in particular the emerging economies that are seeking diversified energy sources to meet their energy demand and sustain economic growth.

27. Demand will mainly be determined by global economic growth and the competitiveness of natural gas compared with other sources of energy in terms of price, environmental and safety impact. Other factors such as proximity to the source of supply, technological advances and government policies will also influence demand.

28. Natural gas is one of the cleanest fossil fuels, although it still lags behind renewable and nuclear energy in terms of carbon emissions. Nonetheless, its importance in the world energy mix is growing. For example, China's twelfth Five-year Plan (2011-2015) aims to increase the share of natural gas in its primary energy mix from 3.8 per cent in 2008 to 8.3 per cent.[10] The 2011 incident at the Fukushima nuclear plant in Japan has made some countries rethink their nuclear energy policies and switch to renewable energy and natural gas in order to satisfy future energy demand. For example, Germany has decided to close 17 nuclear plants and replace them with renewable energy and gas-fired power stations by 2022.[11] These policies will have significant implications for future global natural gas demand.

F. Coal

29. In 2008, coal accounted for 27 per cent of global primary energy supply,[12] and it remains the major fuel for electricity generation, although it faces increased competition from natural gas and renewable energies. For example, in EU, coal use has been declining since 1990.

30. The Asia-Pacific region has become a world centre for coal production, consumption and trade. Between 2009 and 2010, global coal production and consumption grew by 6.3 per cent and 7.6 per cent, respectively.[13] China and India

[10] International Energy Agency, *World Energy Outlook 2011* (Paris, 2011).

[11] "German energy plan seen as viable", *Financial Times*, 21 June 2011.

[12] International Energy Agency, "Key world energy statistics 2010" (Paris, 2010).

[13] "BP statistical review of world energy 2010: June 2011" (London, 2011). Estimates based on 1 million tons of oil equipment (Mtoe) data.

are among the top three coal-producing and -consuming countries in the world.[14] Australia is the world's main exporter of coal and Japan continues to be the world's largest coal importer.

31. During the 2002-2008 commodity boom, the monthly prices for Australia's thermal coal peaked in July 2008 (US$ 193 per metric ton) before falling to US$ 65 per metric ton in March 2009, owing to the global economic recession (figure VII). Supported by strong demand from China, the price of coal has increased since April 2009. Despite short-term volatility, the price continued its upward trend to reach a cyclical peak in January 2011. In 2010 and during the first quarter of 2011, coal prices averaged US$ 106 and US$ 135, respectively.

32. As global efforts to combat climate change intensify, the prospects for coal in the world market, in the medium term, would most likely depend on carbon emission reduction agreements and policies and the development of carbon dioxide (CO_2) capture and storage technologies.

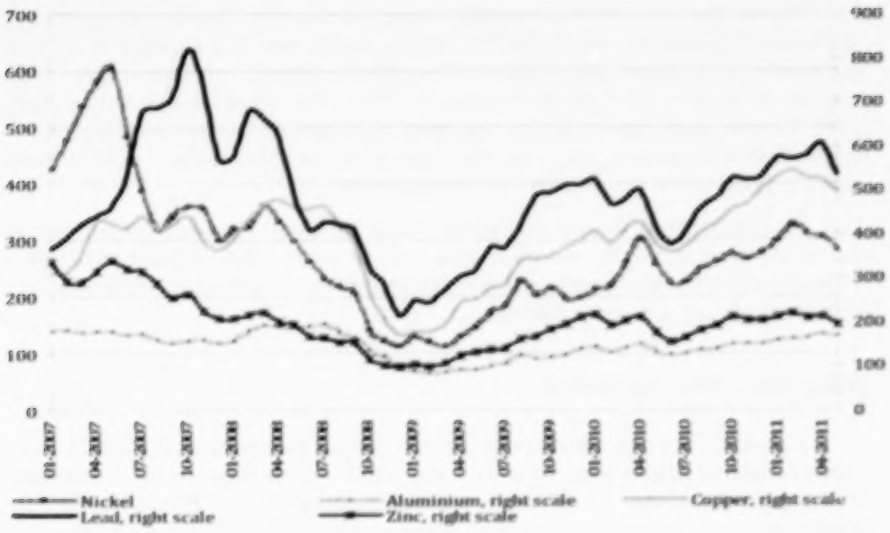
G. Minerals, ores and metals

33. Minerals, ores and metals price indices sharply increased in 2010-2011, with copper, lead and zinc driving the price rises, which were a response to the stronger-than-expected recovery in emerging economies. Notably, in 2009, Chinese base metals demand grew about 24 per cent, whereas consumption declined 13.5 per cent in the rest of the world. The upward trend in metal prices continued during 2010-2011 (figure VIII) owing to a combination of tightening supply and a strong demand from Asian countries and Brazil. Over the next few years, the shortage of investment in new mines, coupled with an already challenging situation in respect of upgrading mining capacity, is set to lead to generation of a further supply contraction. Thus, if demand continues to grow at the rates observed over recent years, metal prices could rise further in the medium term.

[14] Ibid.

Figure VIII
Price indices of non-ferrous metals, January 2007-May 2011

(2000 = 100)



Source: UNCTADstat.

34. From 2003 to 2008 Asia's demand for minerals ores and metals caused prices to rise to record highs; however, the onset of the financial crisis reversed demand for most of these commodities, which subsequently led to dramatic falls in prices. The decline in demand also raised global stock levels and contributed to reduced prices.

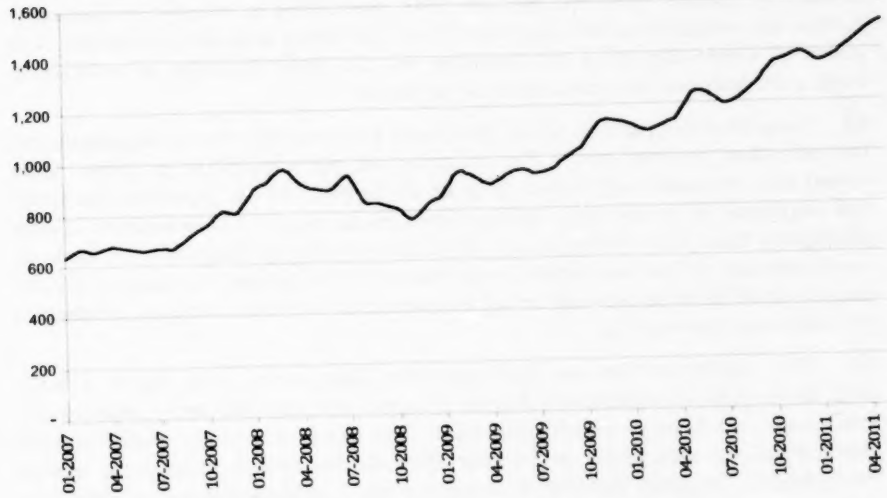
35. Since 2009, copper prices have been on an upward trajectory. In 2009, prices more than doubled as China sustained its demand. Prices continued to climb in 2010 as a result of tight supply owing to underinvestments in mine production. According to the International Copper Study Group, the expected annual refined copper production deficit (estimated at about 250,000 tons in 2010), is expected to rise to 377,000 tons in 2011. As regards trend demand growth, consumption levels are expected to rise rapidly, which could have a dramatic effect on prices if there is insufficient supply capacity available to meet this demand. Uncertainty in the market resulting from factors such as political disturbances in the region of the Middle East and North Africa, changes in trade and monetary policies, and the aftermath of the earthquake in Tohoku, Japan, could affect production deficits and influence prices.

36. Lead, zinc, nickel and tin prices fell in 2008, following a slump in demand triggered by the global recession, but recovered in 2009 and followed an upward trend in 2010 owing to the fast pace of growth in China's refined output. The increase in lead consumption reflected both a restocking phase and a rise in its use by the automotive sector. Zinc consumption increased by 16.3 per cent in 2010 but has grown relatively slowly in 2011. Tin prices rose on the back of strong demand in

Asia, with China, Japan, the Republic of Korea and Taiwan Province of China accounting for approximately 85 per cent of consumption from the region.

37. Gold is a traditional safe haven during times of uncertainty. In the aftermath of the financial crisis, demand for gold rose modestly as stock markets took a tumble. However, in 2009, gold prices had risen by 32 per cent because of the recession in Europe and the United States, and the strong demand from Asia, notably in China and India; prices rose again by 24 per cent in 2010, ending the year at a record high of $1,390 per ounce (figure IX). A variety of factors contributed to the price increase, including the falling dollar, cuts to interest rates, and rising inflation. In June 2011, gold prices set a new record of $1,528 per ounce as investors took refuge in gold, following the tentative recovery in both the United States and Europe and, in particular, given the continuing sovereign debt problems in the periphery of the Euro zone. Investors are also buying into stock exchange-traded funds (ETFs), which offer exposure to the gold market without imposing the necessity of buying the physical product. Uncertainty in dealing with the government debt crisis in Europe has also played a part in gold's reaching a new record price.

Figure IX
Gold prices, January 2007-May 2011
(dollars/troy ounce)



Source: UNCTADstat.

IV. Commodity price volatility: potential policy responses at the domestic and international levels

A. Policy responses to commodity price volatility

38. The present section focuses on the large recent fluctuations in commodity markets, the impact of price volatility on developing countries, and the potential policy responses at the domestic and international levels.

39. Commodity prices have shown considerable volatility over the past decade. The price boom between 2002 and 2008 was the most pronounced in several decades — in terms of magnitude, duration and breadth. Moreover, the price decline following the onset of the recent global crisis in mid-2008 stands out both for its sharpness and for the number of commodities affected. Since mid-2009, and especially since the summer of 2010, global commodity prices have been rising rapidly again (except for some temporary setbacks in the second quarter of 2011).

40. There are many explanations for the volatility in commodity markets, including the so-called financialization of commodities as an asset class. High prices across a broad range of commodities and the potential diversification benefits of a wide array of investment opportunities have drawn speculative investors (for example, hedge funds, and commodity index and exchange-traded funds) into commodity markets. Between 2003 and 2008, speculative investment in commodity indices was estimated to have increased from $15 billion to about $200 billion. The issues of commodity price development and the financialization of commodity trading are discussed in greater detail in the annex.

41. Long-term comparisons show that recent price volatility is not unprecedented for individual commodities.[15] For example, oil price volatility in 2008, while remarkable, remained well below its spike of the early 1970s. However, the speed and amplitude of recent price swings for a broad range of commodities clearly distinguish them from earlier ones.[16] More specifically, the magnitude of the most recent upswing of food and metals prices was above the historical average, while the magnitude of the price rebound for oil was similar to historical averages, although it was achieved more rapidly.

42. Price variations that are predictable (in other words, that follow a well-established trend or exhibit well-known seasonal patterns) are rarely problematic. Price variations become problematic when they cause uncertainty, either because they cannot be anticipated or because they do not reflect changes in market fundamentals. Volatility becomes a concern when it induces risk-averse behaviour that leads to inefficient investment decisions. When volatility becomes "excessive" — that is, when it causes disruptions that are beyond the management capacity of producers and consumers — it should be addressed by policy, including support mechanisms, at the national and international levels.

---

[15] O. Calvo-Gonzales, R. Shankar and R. Trezzi, "Are commodity prices more volatile now? A long-run perspective", World Bank Policy Research Working Paper, No. 5460 (Washington, D.C., World Bank, October 2010).

[16] J. Baffes and T. Haniotis, "Placing the 2006/08 commodity price boom into perspective", World Bank Policy Research Working Paper, No. 5371 (Washington, D.C., World Bank, July 2010).

43. High commodity price volatility, if not properly managed, can have negative implications for development. Volatile and uncertain revenue flows can complicate not only fiscal management, but also budgetary and long-term planning. Volatility could also undermine development efforts by discouraging investment, widening trade deficits and aggravating household poverty, particularly since commodity sectors generally constitute the major source of livelihoods for large sections of the population in low-income and least developed countries. Balance-of-trade fluctuations induced by commodity price volatility can also have profound negative effects on development by impacting real exchange rates, thereby increasing the cost of foreign borrowing and limiting the capacity to service foreign debt.

44. Many attempts have been made at the international and domestic levels to stem commodity price volatility and mitigate its impacts, with a view to assuring returns to producers that are considered "remunerative". Past strategies have included (a) supply management schemes; (b) income support programmes to protect commodity-dependent developing countries from declines in export earnings; (c) market-based risk management mechanisms; (d) revenue management schemes;[17] and (e) diversification and value-addition programmes.

B. Supply management schemes: international commodity agreements

45. Past attempts by the international development community to develop a viable international commodity policy that would address price volatility and stabilize incomes for producers were made within the framework of UNCTAD. An Integrated Programme for Commodities (IPC) was proposed in August 1974 and approved at the fourth session of UNCTAD in 1976. Subsequently, negotiations were launched to establish international commodity agreements (ICAs) for a basket of commodities. It was envisioned that those agreements would finance buffer stocks so as to reduce price fluctuations and stabilize prices at levels remunerative to producers. The Common Fund for Commodities was established as the financing facility.[18] However, the only new commodity agreement containing economic clauses that was negotiated within the context of the Integrated Programme for Commodities in UNCTAD was the International Rubber Agreement, while other agreements (for example, on tin and sugar) were discontinued.

46. Supply management schemes were also implemented by marketing boards in many developing countries. Those organizations performed a role in stabilizing prices via national stockpiles and buffer stock facilities, but were largely dismantled in the 1980s and 1990s under structural adjustment programmes.

47. Arguably, the world's most successful supply management scheme is OPEC. Its objective is to ensure the "stabilization of prices in international oil markets with due regard being given to the interests of the producing nations and to the necessity of securing a steady income to the producing countries".[19] To achieve this objective,

[17] IMF, "The role of fiscal institutions in managing oil revenue boom" (SM/07/88) (Washington D.C., March 2007).

[18] The agreement establishing the Common Fund for Commodities, which was adopted in 1981, entered into force only in 1989, with its first window designed to finance buffer stocks being suspended.

[19] See http://www.nccr-trade.org/publication/oil-supply-managment-practices-the-organization-of-petroleum-exporting-countries-opec-under-the-w/.

quotas are periodically adjusted to market conditions. Despite some problems of quota enforcement, OPEC supply management generally helped to stabilize world oil prices, thus increasing the predictability of producers' export earnings. Dialogue between suppliers and consumers has also been utilized to control supplies to the market, thereby providing the global oil-dependent economy with greater stability.

C. Income support programmes

48. Compensatory financing facilities, designed to compensate for shortfalls in income and short-term price shocks, have not fared any better than international commodity agreements, in part because, until early 2002, many commodities suffered from secular price declines. The best-known examples of compensatory finance facilities are (a) the Contingency and Compensatory Financing Facility (CCFF) of the International Monetary Fund (IMF) (1988), preceded by the Compensatory Financing Facility (CFF), which had commenced operation in 1963; and (b) the EU Stabilization of Export Earnings (STABEX) system[20] and the EU Vulnerability FLEX (V-FLEX) short-term financing instrument, which assists the most vulnerable members of the African, Caribbean and Pacific Group of States in coping with the impact of the global financial and economic crisis and in mitigating its social consequences.

49. The objective of the Contingency and Compensatory Financing Facility was to smooth the effects of a temporary exogenously caused shortfall in merchandise export receipts below the medium-term trend in a particular country. It sought to provide countries lacking either sufficient reserves or the capacity to borrow externally with the capacity to smooth the path of national consumption in the face of a temporary shock to export earnings. The eligibility requirements for access to the compensatory financing element of the Contingency and Compensatory Financing Facility include: (a) a temporary export shortfall and/or excess cereal import that is attributable to factors largely beyond the control of authorities; (b) a balance-of-payments problem; and (c) a willingness to cooperate with IMF in addressing the problem.

50. Income support programmes, while pursuing goals similar to those of compensatory mechanisms, provide protection against sharp drops in export earnings and in this regard, consider the commodity price aspect as well as the potential decline in yields. The United States, for instance, created the Risk Management Agency (RMA) in 1996 to administer Federal Crop Insurance Corporation (FCIC) programmes and other non-insurance related risk management schemes that help support domestic agriculture.[21] Programmes are generally based on the sale of crop insurance via licensed private contractual brokers, but FCIC ensures the backing by providing reinsurance facilities (that is to say, subsidized insurance).

51. More traditional crop insurance generally takes into account only yield risk (protecting against "physical" loss that may occur during the crop year); but it can be combined with price risk mitigation mechanisms so as to ensure full protection.

[20] Two other compensatory financing schemes are the EU System for Safeguarding and Developing Mineral Production (SYSMIN) and the Switzerland Compensatory Financing Programme.

[21] See http://www.rma.usda.gov/.

Only a few countries — such as South Africa, Ethiopia, Kenya and Malawi[22] — currently use crop insurance schemes; however, with climate change exacerbating this type of risk, the relevance of these schemes is likely to become increasingly important and to be hotly debated in the foreseeable future.[23] An initiative to develop such a risk-pooling scheme in Caribbean countries (for example, in Jamaica for coffee) is under consideration and may be backed by a Caribbean Catastrophe Risk Insurance Facility which currently does not cover agriculture.

D. Market-based risk management mechanisms

52. Since the 1990s — against the background of the limited progress made by both domestic and international price stabilization schemes in addressing the commodity problems of developing countries — attention has focused on the use of market-based mechanisms for managing commodity price risks. These are instruments designed to offset exposure to price risk through financial markets or other institutions. The relevant derivatives contracts are usually traded on international commodity exchanges in major financial centres (for example, London and New York). Technically, these mechanisms permit producers, or Governments of producing countries, to limit the risks arising from unanticipated price movements by passing them on to investors. Hedging instruments that are used range from the basic types such as forward contracts, futures and options, to complex combinations (for example, collars and over-the-counter tools, among others), with the instrument used depending on the end-user's strategy for shifting risk.

53. However, the use of these market-based instruments is not widespread in low-income developing countries because of their sophistication and size and the cost incurred in using them. Accordingly, interest is now focusing on the establishment of commodity exchanges in developing countries that can offer hedging opportunities adapted to the needs of domestic producers and traders. However, not all developing countries — especially not low-income commodity-dependent countries — have the necessary critical mass of professional traders/exporters and large commodity producers required to operate an exchange with viable and effective hedging possibilities. In any case, while futures markets may help to address problems related to price variability, they cannot address the issue of long-term declines in commodity prices and negative terms-of-trade trends for commodity-dependent countries.

54. Over the past decade, there has been political interest expressed by developing countries — for example, at the African Union Conference of Trade Ministers in 2005 — in using some of these mechanisms, such as commodity exchanges. A limited number of developing countries have the institutional sophistication and market and professional characteristics required to operate viable commodity exchanges. Capitalizing on the size of their domestic market, or their market share

[22] In 1995, the European Union established TARSIM, a management entity designed to provide, in partnership with a pool of insurance companies, a crop insurance facility (backed by government contributions that subsidize part of the insurance premium).

[23] K. Derviş, "Given that mitigating climate change requires investment, how much should we invest and when?", The Climate Change Challenge, UNU World Institute for Development Economics Research (UNU-WIDER) Annual Lecture 11.

in a commodity in which they have a leadership role, Malaysia and Brazil have succeeded in establishing commodity exchanges through private sector initiatives, with some Government regulatory oversight.

55. A few low-income commodity-dependent African countries have also established (or are contemplating establishing) commodity exchanges. For example, the Ethiopia Commodity Exchange started trading operations in coffee in April 2008. It has since launched trading operations with contracts for other commodities such as maize, wheat, processed and unprocessed haricot beans and sesame.

E. Revenue management

56. A number of regional initiatives in the developing world demonstrate political commitment to promoting transparency and good governance in the management of revenues. In Africa, major initiatives include the African Peer Review Mechanism (APRM) of the New Partnership for Africa's Development (NEPAD).[24] In the Asia-Pacific region, important transparency and anti-corruption initiatives have been promoted by the Asian Development Bank (for example, the Asian Development Bank/OECD Anti-Corruption Initiative for Asia and the Pacific) and the Asia-Pacific Economic Cooperation (APEC) (Government Procurement Experts' Group and the Anti-Corruption and Transparency Task Force). In Latin America, the Inter-American Convention against Corruption,[25] negotiated under the umbrella of the Organization of American States, represents a leading example of regional action in the developing world. Political commitments to deny safe haven to corrupt officials and those who corrupt them have also been taken up by the Organization of American States and the APEC Forum.

57. At the national level, various revenue management schemes, such as stabilization funds, have also been designed and implemented to smooth fluctuations in revenues associated with commodity price variability over a time-horizon, and thereby reduce the severe disruptions that those fluctuations could introduce into macroeconomic planning, including critical expenditure.

Stabilization funds

58. Price stabilization funds have been established and operated by several commodity-dependent developing countries to help reduce the fluctuations in budgetary revenues. The funds accumulate revenue above a reference value during the boom periods and allow for transfers to be made to the budget or the economy during the bust periods. The aim is to smooth spending over the boom-bust cycle and avert sudden changes in spending, for example, on capital expenditure, and financing of public services, such as health, education and basic infrastructure, which could have severe consequences for budgetary discipline. Commodity-based sovereign wealth fund (SWF) assets owned by developing and emerging economies are estimated at US$ 1.9 trillion.[26]

[24] A/57/304, annex.

[25] See document E/1996/99.

[26] Sovereign Wealth Fund Institute (see http://www.swfinstitute.org/fund-rankings/).

59. Fiscal stabilization funds have been used by a number of commodity exporting countries for some time and have been a subject of interest for many developing countries in this era of increased volatility and uncertainty in respect of revenues.

60. Developing-country experience of stabilization funds has shown that a strong institutional framework, transparency and accountability are essential in making them work effectively. An inclusive multi-stakeholder approach, such as the Extractive Industries Transparency Initiative,[27] involving the private sector and civil society organizations, has helped in promoting transparency, accountability and governance in the use of those funds in some countries. These initiatives have also served to uncover financial irregularities which can contribute to the demise of the funds. Nevertheless, the ultimate strength of these multi-stakeholder initiatives lies in the credibility and effectiveness of the process, which in turn hinges on stringent reporting and auditing standards, and an external validation process with detailed templates and timescales.

61. These aspects make implementation technically complex and costly, and raise capacity constraints in several countries. Furthermore, multi-stakeholder initiatives establish accountability mechanisms within complex collaborative networks that enhance the participatory approach but may undermine local incentives to strengthen domestic (parliamentary) institutions.[28] A key issue is how to establish a virtuous circle whereby multi-stakeholder dialogue feeds into and strengthens domestic political processes.

F. Diversification and value-addition

62. The long-term effects of commodity price instability are greater for commodity-dependent countries. Thus, in the long run, reducing commodity dependence can contribute to indirectly addressing price volatility. Several diversification measures exist — for example, vertical integration into products and processes that capture a higher proportion of the value chain, and diversification into other sectors.

63. However, many factors can impede diversification including: (a) structural barriers in international trade (tariff and standards escalation); (b) scarce resources for investing in the sector, which in turn can be affected by commodity price volatility; (c) weak infrastructure, particularly as regards both cost and availability of transportation and storage; (d) lack of skills in producing and marketing alternative products; and (e) limited access to finance. Other constraints limiting the extent to which commodity-dependent developing countries diversify include social and political factors and macroeconomic factors such as debt burden and devaluation, which favour increasing the production and export of traditional products because it is easier to do so in the short to medium term.

64. Experience in some commodity-dependent developing countries (for example, Chile, Malaysia and Mauritius) shows that successful diversification can be

[27] See http://siteresources.worldbank.org/INTSDNET/Resources/5944695-1254248728084/IDA_EITI_2010.pdf.

[28] See Sam Jones, *Sub-Saharan Africa and the "Resource Curse": Limitations of the Conventional Wisdom*, DIIS Working Paper, No. 2008: 14 (Copenhagen, Danish Institute for International Studies, 14 May 2008), p. 34.

achieved through comprehensive partnerships with various commodity stakeholders, including international firms. Skills and technology transfers can be encouraged through incentives and joint ventures between local and international enterprises in the industry, in addition to policies that stipulate technology transfer in licensing agreements, in particular if they are systematically evaluated and in cases where organizations are rewarded for evidence of domestic capacity-building.

65. Governments have a critical role to play in enunciating the medium- and long-term objectives of a diversification strategy that is consonant with their overall development priorities, as well as in creating an auspicious environment for value-addition, including greater participation by local firms and producers, in higher levels of the value chain.

V. Concluding remarks

66. Commodity markets are inherently volatile, as demonstrated by the cycle of boom to bust to boom in 2007-2010. In fact the commodity price booms since 2002 have been underpinned by supply constraints due mainly to underinvestment over the past two decades in both extractives industries and agricultural commodities. This underscores the need for increased and sustained investment in commodities as a means of addressing price variability due to supply-and-demand imbalances. Volatile commodity markets create many challenges for developing countries, notably the net food importing countries and those heavily dependent on the export of just a narrow range of commodities, including many of the least developed countries. In the past, various international, regional and national support measures were designed and implemented with varying degrees of success. Further, recent developments in commodity markets have added new and complex dimensions to commodity price volatility. Innovative and coherent policies at national, regional and international levels are necessary to ensure that price volatility does not impede growth and development, and poverty eradication efforts.

67. In this regard, it might be useful for the international community to revisit the supply management schemes within the context of the new reality of commodity markets, while exploring the potential of these schemes for enhancing cooperation between producers and consumers and stabilizing markets. Various income support programmes can also play a role in addressing short-term price shocks and associated dramatic income fluctuations. However, procedures to access these programmes need to be simplified and accelerated so as to meet the urgent needs of eligible countries, including counter-cyclicality.

68. Market-based risk management instruments, such as futures, options and weather-index insurance, could reduce commodity price volatility and other risks when prerequisites are in place. However, tremendous efforts are needed to build institutional mechanisms, including the legal and regulatory framework, and to train potential clients in understanding and using these instruments. Furthermore, tighter regulation and greater transparency are important for reducing excessive price volatility in the "financialized" commodity markets. In order to avoid compromising the positive role of futures markets in providing liquidity and in price discovery, these instruments would have to target the activities of "non-commercial" market participants that are unrelated to market fundamentals.

69. The extreme vulnerability of mineral resource-endowed developing countries to Dutch disease and the resource curse would require prudent fiscal policies and management of the real exchange rate, with a view to reducing the dependency on external debts. Establishing institutional mechanisms, such as stabilization funds, will contribute to better macroeconomic management and to elimination of the pitfalls associated with the resource curse. Diversification will reduce the dependence on a limited number of commodities for revenue generation and improve, in the long term, the resilience of developing countries to commodity price shocks. However, the role of the State is critical in prioritizing diversification in the medium- and long-term development strategies, mobilizing resources and monitoring their implementation.

70. Episodes of extreme volatility in commodity markets and unexpected price swings have already prompted collaborative global action. Agriculture ministers from the Group of Twenty (G-20) leading economies, under the presidency of France, having met in Paris on 22 and 23 June 2011, released a ministerial declaration establishing an Action Plan on Food Price Volatility and Agriculture. The centrepiece of the five-point Action Plan is the Agricultural Market Information System (AMIS). The key objective of the System is to address high and volatile food prices through tougher regulation of speculative investments in commodity markets and government mandates on biofuels. Action at the international level aimed at increasing physical commodity markets transparency, improving the prevention and management of food crises and strengthening hedging instruments so as to provide better protection for the poorest populations, would reduce their vulnerability to excessive price volatility.

Annex

Commodity price development and the financialization of commodity trading

I. Introduction

1. Price volatility and the associated uncertainty in decision-making have always been a defining characteristic of commodity markets. This is because (a) medium- and longer-term commodity supply-and-demand conditions are subject to unknown factors, such as undetermined depletion rates of non-renewable resources and unknown effects of climate change on agricultural production; (b) inventory data, which provide valuable signals for short-term price expectations, suffer from significant measurement errors;[a] and (c) data on current global commodity supply-and-demand conditions are published with long time lags and are frequently revised. Therefore, even well-informed traders must formulate price expectations on the basis of partial and uncertain data.

2. To make matters worse, uncertainty in commodity markets is likely to have increased even further. In recent years, rapid industrialization, urbanization and changes in dietary habits in emerging economies, especially in Asia, have led to a growing demand for commodities. On the other hand, it has been difficult to accurately assess the impact of these signals on the short-term evolution of supply-and-demand relationships. This is due not only to uncertainties about the stability of rapid economic growth in emerging economies, but also, and especially, to the often wide gaps in the availability of data regarding these economies' commodity demand, supply and inventory situations.

3. These signals from the demand side have combined with growing doubts about the possibility of realizing technological breakthroughs anytime soon, and the ability to promptly overcome emerging technological obstacles to a commensurate increase in commodity supply, as had often been the case in the past. With regard to oil, for example, there has been a debate about whether the point of "peak oil" will be reached in the near future. With regard to agricultural commodities, news about slower growth of agricultural productivity has added to already growing concerns about land use, water shortages and, more generally, the link between agricultural production and climate change. Moreover, first-generation biofuels, which are based on food stocks, seem to have greatly increased the relevance of information on energy for trading in agricultural commodities, and vice versa. Low investment in production, infrastructure and research into ways of improving growth in commodity supply over the past few decades, when commodity prices were low, has been identified as a major cause of these supply constraints.

4. In such a situation of enhanced price uncertainty, the traditional roles of commodity derivatives markets in price discovery and risk management have gained

[a] G. Gorton, F. Hayashi and K. G. Rouwenhorst, "The fundamentals of commodity futures returns", *NBER Working Paper*, No. 13249 (Cambridge, Massachusetts, National Bureau of Economic Research, July 2007); and M. S. Khan, "The 2008 oil price 'bubble'", Policy Brief, No. PB09-19 (Washington, D.C., Peterson Institute for International Economics, August 2009).

increasing importance.[b] Commodity exchanges appropriately fulfil their roles in price discovery and risk transfer if market participants, in addition to using publicly available information, trade on the basis of (a) independent and individual information derived from an intimate knowledge of specific events relating to commodity markets and (b) of their own plans to supply or demand commodities.

II. Financialization of commodity trading

5. The increasing roles of financial motives, financial markets and financial actors in the operations of commodity markets — often referred to as the "financialization of commodity trading" — have increasingly put at risk the appropriate functioning of the price discovery and risk transfer functions of commodity derivatives markets. While financial investors have long been active on commodity markets, financial investment in commodities gained considerable attention following the bursting of the equity market bubble in 2000 and the range of financial participants in commodity derivatives markets and the kind of instruments they use have broadened considerably since the first half of the 2000s.

6. Investment in commodity indices has probably attracted the most attention over the past few years. Index investment tracks returns on weighted commodity baskets (for example, the Standard and Poor Goldman Sachs Commodity Index (S&P GSCI) and the Dow Jones-Union Bank of Switzerland Commodity Index (DJ-UBSCI)). These indices are composites of futures contracts on a broad range of commodities traded on commodity exchanges. According to index investment data from the United States Commodity Futures Trading Commission, the net investment position by index investors in the United States amounted to US$ 246 billion as of May 2011, down from a peak of US$ 256 billion in April 2011. The use of exchange-traded funds and notes (ETFs and ETNs) has rapidly expanded since about 2009.[c] According to data from Barclays Capital,[d] assets under management in exchange-traded products (ETPs) amounted to US$ 181 billion in June 2011, of which three quarters were in precious metals. The share of the value of commodity assets under management in global gross domestic product (GDP) increased more than fourfold during the period 2008-2010. Taken together, data on financial

[b] Commodity derivatives include futures and options contracts traded on organized exchanges, as well as forward, options and swaps contracts traded on over-the-counter (OTC) markets. A derivative is a financial asset, generally a contract between two or more parties, whose value is dependent upon or derived from one or more underlying assets, such as a commodity futures contract or a commodity index. Futures contracts are agreements to buy or sell a quantity of a commodity at a predetermined price. An option is a contract that confers the right, but does not impose the obligation, to buy or sell a futures contract at a specified price, at or before a future date. It provides protection against unfavourable price movements with, at the same time, retention of the possibility of profiting from higher prices, unlike futures. In addition, tailored products, such as swaps, are traded in the OTC market. Swaps lock in commodity prices over the medium to long term. For detailed reviews of commodity risk management instruments, see UNCTAD, "A survey of commodity risk management instruments" (document UNCTAD/COM/15/Rev.2 of 6 April 1998).

[c] ETFs are essentially mutual fund shares that trade on equity markets and track a designated commodity index. ETNs are debt securities where the issuer makes payouts based on the value of the underlying commodity index.

[d] Barclays Capital, "The Commodity Investor", Commodities Research (London, Barclays Bank PLC, 19 July 2011).

investment in commodity markets indicate that, in spite of some decline in the second half of 2008, the financialization of commodity markets had been increasing unabated until about May 2011 when some (perhaps temporary) decline set.[e]

7. Along with a wider range of instruments, investors and trading strategies have become more diverse. Perhaps most importantly, much of index investment appears to have moved away from taking long positions[f] only in commodity futures included in major indices (such as the S&P GSCI and the DJ-UBDCI) and concentrating on futures contracts with a relatively short maturity (1 to 3 months) towards taking positions that include contracts with a longer maturity (6 to 12 months) and focus on specific commodity categories (for example, energy) or even individual commodities. ETF sponsors may take long positions in commodity futures, but also techniques to track indices. An important recent development is that some ETFs, such as those on copper and aluminium, are backed by physical commodities rather than futures contracts. Money managers — such as hedge funds and institutional investors that adopt different trading strategies based on macroeconomic fundamentals, detailed commodity research, algorithmic trading or trend following, and general financial portfolio diversification considerations — typically take both long and short positions of a more short term oriented and actively managed character. More recently, some financial investors have become increasingly involved in algorithmic high-frequency trading (HFT).

8. Different rationales have motivated investing in commodities. As there is a historically positive correlation between commodity returns and inflation, investors perceive commodities that are easy to store, such as precious metals, as an effective inflation hedge. Institutional investors with a long-term investment horizon may have been attracted by diversification benefits for portfolio rebalancing. With reference to data for the period 1959-2004, it has been argued that "the risk premium on commodity futures is essentially the same as equities, (whereas) commodity futures returns are negatively correlated with equity returns and bond returns" and that "(t)he negative correlation between commodity futures and the other asset classes is due, in significant part, to different behaviour over the business cycle".[g] In addition, the limited range of investable assets in some emerging economies may have encouraged some investors to view commodity investment as a means to gain exposure to rapidly growing emerging market economies. Furthermore, investing in commodity futures contracts may provide a hedge against changes in the exchange rate of the dollar. Most commodities are traded in dollars and commodity prices in dollar terms tend to increase as the dollar depreciates. Finally, the recent low interest rate environment may have induced both individual and institutional investors to search for higher yields and choose riskier assets, such as commodities, when the return on safer assets, such as government bonds, is low.

---

[e] For further discussion, see *Trade and Development Report 2011* (United Nations publications, Sales No. E.11.II.D.3), chap. V, entitled "Financialized commodity markets: recent developments and policy issues".

[f] A long position is a market position that obligates the holder to take delivery (in other words, to buy a commodity), in contrast with a short position, which obligates the holder to make delivery (in other words, to sell a commodity).

[g] G. Gorton and K. G. Rouwenhorst, "Facts and fantasies about commodity futures", *NBER Working Paper*, No. 10595 (Cambridge, Massachusetts, National Bureau of Economic Research, March 2006), p. 1.

III. The price impact of financial investment in commodity markets

9. While the growing participation of investors in primary commodity markets is generally acknowledged, there has been considerable debate in recent years regarding whether this has raised the level and volatility of commodity prices. Some authors consider broad-based changes in fundamental supply-and-demand relationships as the sole drivers of recent commodity price development, and argue that the greater participation of financial investors in commodity markets has actually moderated price swings.[h] Others argue that the financialization of commodity markets tends to drive commodity prices away from levels justified by market fundamentals, with negative effects both on producers and on consumers.[i]

10. This ongoing debate centres around two related questions. First, how can financial investment affect physical market prices given that it is associated mostly with futures market activity and does not concern spot market transactions? Second, does financial investment alter demand for and supply of commodity futures in a way such as to move prices away from fundamentals and/or increase their volatility?

11. Regarding the first question, in many markets, price discovery at delivery is often the mechanism of last resort, whereas the bulk of transactions are executed at futures prices with reference to the price of nearby futures contracts (that is, contracts that are approaching maturity).[j] Regarding crude oil, the International Energy Agency describes how common trading practices cause the futures market to determine the price at which physical delivery occurs.[k] Moreover, while financial investors may not hold physical inventories themselves, their investments bid up the prices of futures contracts, which in turn provides an incentive for others to hold inventories.

12. The observation that no such accumulation of inventories occurred during the commodity price hike of 2006-2008 relates to a second argument, one introduced by Paul Krugman with regard to oil prices.[l] According to Krugman, speculative activity that drives prices above fundamental equilibrium levels will cause market imbalances and excess supply, which must result eventually in inventory accumulation. This reasoning would suggest that, since reported oil inventories did not increase, speculation cannot have played a role in causing oil prices to rise in 2008. However, others argue that data on oil inventories are notoriously poor.[m] Data on oil inventories are not reported by most non-OECD countries, which account for almost half of world demand for crude oil and include very large consumers such as China, nor is the data on oil stored in tankers, thus distorting the inventory data

[h] See, for example, S. H. Irwin and D. R. Sanders, "The impact of index and swap funds on commodity futures markets: preliminary results", OECD Food, Agriculture and Fisheries Working Paper, No. 27 (Paris, 2010).

[i] See, for example, C. L. Gilbert, "Speculative influences on commodity futures prices 2006-2008", United Nations Conference on Trade and Development Discussion Paper No. 197 (Geneva, March 2010).

[j] C. L. Gilbert, "How to understand high food prices", *Journal of Agricultural Economics*, vol. 61, No. 2 (2010), p. 409.

[k] International Energy Agency, *Medium-Term Oil Market Report* (Paris, OECD/IEA, 2009), p. 107.

[l] Paul Krugman, "The oil nonbubble", *New York Times*, 12 May 2008.

[m] M. S. Khan, "The 2008 oil price 'bubble'", p. 5 (see footnote a).

reported by OECD countries. Hence, no strong inferences can be drawn from such data. More fundamentally, Krugman's argument may take time to play out. Rising demand for futures contracts tends to cause a price increase in long-dated futures contracts, which in turn will provide an incentive to accumulate inventories; but given the very low short-run price elasticity of commodity supply, the short-term inventory supply curve is close to vertical. As a result, only an increase in spot prices can meet the increase in demand. Over time, production and consumption will respond to the higher price, inventories will gradually accumulate and prices will decline. In the interim, however, a commodity price bubble may well occur."

13. Third, spot and futures markets are linked through arbitrage; and a growing presence of financial intermediaries in some physical markets, as well as of some physical traders in financial transactions, is likely to have strengthened this linkage. For example, according to media reports, important financial institutions have come to invest in storage facilities, while large trading houses appear to make speculative bets on commodity prices.[o]

14. Regarding the second question, it should be noted that speculation is an indispensable element of derivatives markets, as speculators are the counterparties that producers and consumers need to offset their positions. In this sense, greater participation by financial investors in commodity futures markets can bring important economic benefits by making markets deeper and helping to accommodate the hedging needs of commercial users and reduce their hedging costs. Financial investors can also promote the liquidity of markets for longer-term futures contracts, facilitating risk management and long-term planning of commodity producers and consumers.

15. On the other hand, the extent to which the growing participation of financial investors actually provides these benefits very much depends on whether their position-taking actually follows developments in commodity market fundamentals and on whether they contribute to the diversity of opinions and thereby increase market liquidity. It is therefore important to note that the greater participation of financial investors may actually have caused commodity markets to follow more the logic of financial markets than that of a typical goods market.[p] In the latter, price discovery is based on information derived from a multitude of independent agents who act according to their own individual preferences. In typical goods markets, profit opportunities arise from individual pioneering action based on the private and circumstantial information of market participants.

16. By contrast, in financial markets, especially those for assets that fall in the same broad risk category (such as equities, emerging-market currencies and, recently, commodities), price discovery is based on information related to a few commonly observable events, or even on mathematical models that mainly use past — rather than only current — information for making price forecasts. In such markets, the most profitable behaviour often entails following the trend for some

[n] C. L. Gilbert, "How to understand high food prices", p. 408.

[o] J. Blas and J. Farchy, "Glencore reveals bet on grain price rise", *Financial Times*, 24 April 2011. Available from: http://www.ft.com/cms/s/0/aca76c5b-6ca5-11e0-a13b-00144feabdc0.html#axzz1KtsjV7En.

[p] Financial investors can also cause a weight-of-money effect. For further discussion, see UNCTAD, *Trade and Development Report 2009*, chap. II, entitled "The financialization of commodity markets". (United Nations publications, Sales No. E.09.II.D.16)

time and disinvesting just before the rest of the crowd does; on the other hand, acting against the majority, even if justified by accurate information about fundamentals, may result in large losses.

17. Herd behaviour can take various forms. It may be rooted in irrational tendencies and based on what may be called "pseudo-signals" for positions in commodity markets, such as information related to other asset markets and the use of inflexible trading strategies, including momentum investment or positive feedback strategies. Such strategies assume that past price developments carry information on future price movements, thereby giving rise, for example, to trend chasing. This will result in buying after prices rise and selling after prices fall, independent of any changes in fundamentals.

18. Herd behaviour can also be fully rational. Information-based herding, for example, consists in imitation in situations where traders believe that they can glean information by observing the behaviour of other agents. In other words, investors converge in their behaviour because they ignore their private information signals. Position-taking based only on other peoples' previous actions will lead to price changes without infusing any new information into the market. A sequence of such actions causes a snowballing effect which will eventually lead to self-sustaining asset price bubbles. Informational herding is most likely to occur in relatively opaque markets — in commodity trading, for example.

19. The persistence of price deviations from fundamental values caused by herding depends on the speed and efficiency of arbitrage. An arbitrage opportunity offers the possibility of earning a positive return at no risk. Such a possibility will arise if prices diverge from fundamental values or across markets on which identical assets are traded. However, widespread agreement exists that there are limits to arbitrage.[q] For example, rational arbitrageurs may not be able to correct mispricing, either because of risk aversion or because of capital constraints.[r]

20. What is more, it may not even be optimal for rational arbitrageurs to counter the position-taking of irrational investors that follow positive feedback strategies. Instead, they may want to buy and push up the price following some initial good news, thereby providing an incentive for feedback traders to aggressively buy the asset. This reaction by feedback traders will allow the rational arbitrageurs to sell their positions at a profit. However, in such cases profitable arbitrage also contributes to the movement of prices away from fundamentals and feeds short-term price bubbles.[s]

21. Identifying to what extent financial investment has affected the level and volatility of commodity prices is challenging owing to the limited transparency and level of disaggregation of existing data. Financial investment has probably not had a persistent impact. However, there is evidence to support the view that financial investors have affected price dynamics over short-time horizons. One such piece of evidence is based on the role of dramatic changes in financial positions in the oil

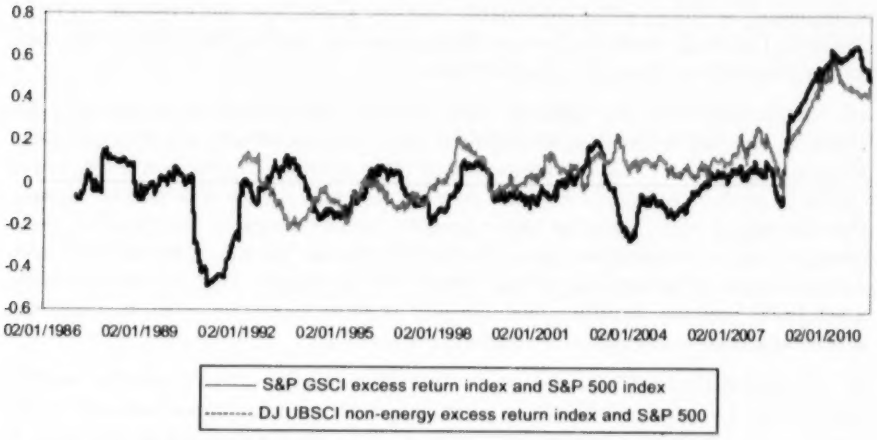
[q] D. Gromb and D. Vayanos, "Limits of arbitrage", *Annual Review of Financial Economics*, vol. 2, No. 1 (2010), pp. 251-275.

[r] A. Shleifer and R. W. Vishny, "The limits of arbitrage", *Journal of Finance*, vol. 52, No. 2 (1997), pp. 737-783.

[s] J. B. De Long and others, "Positive feedback investment strategies and destabilizing rational speculation", *Journal of Finance*, vol. 65, No. 2 (1990), pp. 379-395.

market between February and May 2011.[t] Equally important, recent evidence suggests that adding commodity futures to their portfolios no longer helps investors hedge against equity market risk. The process of deleveraging that began with the onset of the current crisis in mid-2008 and affected all asset markets resulted in a strongly positive correlation between the returns on commodity futures and those on equity investments (see figure).

Correlation between commodity and equity indexes, 1986-2011



Source: UNCTAD secretariat calculations, based on Bloomberg.

Note: The data reflect one-year rolling correlations of returns on the respective indexes, based on daily data.

22. From the evidence related to broad-based investment in commodities, as represented by the dark, solid line in the figure, it would seem that this positive correlation emerged only in the run-up to the current financial crisis, and that it became accentuated only in its aftermath. However, it is well known that the greatest benefits from investing in commodity futures are derived from diversifying across not only different commodity categories but also individual commodities.[u] Because the S&P GSCI is heavily weighted in energy, it is possible that the evolution of this correlation during the early 2000s, and especially its strongly negative numbers in 2003, was strongly influenced by events in energy markets, and especially by the war in Iraq in 2003. Thus, it is useful to examine the correlation between returns on non-energy commodity futures and equity investments. That correlation had already begun to rise in the early 2000s, well before the onset of the current crisis, as reflected in the figure.[v] This evidence supports earlier findings that the introduction of index trading led to a rise in the correlation among the individual

[t] For a detailed discussion, see *Trade and Development Report 2011* (see footnote c).

[u] P. Basu and W. T. Gavin, "What explains the growth in commodity derivatives?" *Federal Reserve Bank of St. Louis Review*, vol. 93, No. 1 (2011), pp. 37-48.

[v] Statistical tests indicate that the shift in the mean of the correlation following the bursting of the equity market bubble in 2000 is strongly significant even if the post-crisis period is excluded. The evidence is qualitatively similar, though numerically less strong, if the S&P GSCI non-energy index is used instead of the non-energy index of the DJ-UBSCI.

commodities included in an index, thus reducing or even eliminating the gains to diversification within individual index funds."

23. The positive correlation between returns on investment in commodity futures and that in equity reached a peak in late 2010-early 2011. This positive correlation is largely attributed to the second round of monetary easing initiated by the United States Federal Reserve in the third quarter of 2010 which is supposed to have made investors prefer riskier assets, such as commodities and equities, over safer ones, such as Government bonds. Based on this perception, it is widely believed that a tightening of the United States monetary stance could go a long way towards increasing the cost of funding that underlies financial investments and that has been seen as causing an inflation of asset prices across financial markets. However, the fact that there have been two shifts, rather than just one, in the correlation between returns on commodity investment and those on equity investment indicates that monetary easing may have only accentuated cross-market correlations. By the same token, a tightening of monetary conditions would merely eliminate the source of the second shift in the cross-market correlation, but it is unlikely to eliminate the financialization of commodity markets altogether and bring cross-market correlations back to where they were at the end of the 1990s.

24. A comparison of developments in commodity and equity prices over various business cycles shows that those prices used to move in opposite directions during the early upswings in previous cycles. In contrast, there has been a remarkable synchronization of equity price and commodity price movements in the most recent cycle. This increased synchronization is surprising because of the continued low level of capacity utilization in the wake of the "great recession" of 2008 and 2009. More important, the fact that monetary policy reacts to price pressure stemming from rising commodity prices, rather than to bottlenecks in industrial production, points to a worrying aspect of the impact of financialization which has so far been underestimated — namely, its capacity to inflict damage on the real economy as a result of sending the wrong signals for macroeconomic management.

---

[w] Basu and Gavin, "What explains the growth in commodity derivatives?", p. 46.